

WHAT IS CLAIMED IS:

1. A formulation for enhancing the surface appearance of an infiltrated metal or metal/ceramic composite part comprising:
 - (a) a solvent;
 - (b) an organometallic binding agent;
 - (c) zirconium dioxide; and
 - (d) at least one polymer.
2. The formulation according to claim 1 wherein the binding agent is selected from the group consisting of titanate and zirconate, and combinations thereof.
3. The formulation according to claim 2 wherein the polymer is selected from the group consisting of polystyrene; two-part epoxy; polymethylmethacrylate; polyvinylacetate; polybutylmethacrylate; polyethylmethacrylate; poly(t-butylacrylate-co-ethylacrylate-co-methacrylic acid); poly(ethylmethacrylate-co-methylacrylate); poly(styrene-co-maleic acid), partial sec-butyl/methyl ester; poly(styrene-co-maleic acid), partial 2-butoxy/ethyl ester; poly(styrene-co-maleic acid), propyl ester; poly(methylvinylether-alt-maleic acid); and poly (ethylene-co-methylacrylate-co-acrylic acid).
4. The formulation according to claim 3 wherein the at least one polymer is poly(styrene-co-maleic acid), partial sec-butyl/methyl ester.
5. The formulation according to claim 3 wherein the solvent is acetone.

6. A formulation for coating the surface of an infiltrated metal or metal/ceramic composite part, the improvement comprising adding to zirconium dioxide at least one of an organometallic binding agent or at least one polymer.

7. The formulation of claim 6 wherein the at least one binding agent is selected from the group consisting of titanate and zirconate, and combinations thereof.

8. The formulation of claim 6 wherein the at least one polymer is selected from the group consisting of polystyrene; two-part epoxy; polymethylmethacrylate; polyvinylacetate; polybutylmethacrylate; polyethylmethacrylate; poly(t-butylacrylate-co-ethylacrylate-co-methacrylic acid); poly(ethylmethacrylate-co-methylacrylate); poly(styrene-co-maleic acid), partial sec-butyl/methyl ester; poly(styrene-co-maleic acid), partial 2-butoxy/ethyl ester; poly(styrene-co-maleic acid), propyl ester; poly(methylvinylether-alt-maleic acid); and poly (ethylene-co-methylacrylate-co-acrylic acid).

9. The formulation according to claim 8 wherein the at least one polymer is poly(styrene-co-maleic acid), partial sec-butyl/methyl ester.

10. The formulation according to claim 6 further comprising a solvent.

11. The formulation according to claim 10 wherein the solvent is acetone.

12. A method of inhibiting infiltrant-bleed-through in a metal or metal/ceramic composite part comprising:

- (a) forming a green part;
- (b) coating the part with a surface enhancing formulation; and
- (c) infiltrating the part with a metal infiltrant.

13. The method of claim 12 further comprising using a formulation to coat the green part comprising a solvent, an organometallic binding agent, zirconium dioxide, and at least one polymer.

14. The method of claim 13 further comprising using a binding agent selected from the group consisting of titanate and zirconate, and combinations thereof.

15. The method of claim 13 further comprising using a polymer selected from the group consisting of polystyrene; two-part epoxy; polymethylmethacrylate; polyvinylacetate; polybutylmethacrylate; polyethylmethacrylate; poly(t-butylacrylate-co-ethylacrylate-co-methacrylic acid); poly(ethylmethacrylate-co-methylacrylate); poly(styrene-co-maleic acid), partial sec-butyl/methyl ester; poly(styrene-co-maleic acid), partial 2-butoxy/ethyl ester; poly(styrene-co-maleic acid), propyl ester; poly(methylvinylether-alt-maleic acid); and poly (ethylene-co-methylacrylate-co-acrylic acid).

16. The method of claim 13 further comprising using poly(styrene-co-maleic acid), partial sec-butyl/methyl ester as the polymer.

17. The method of claim 13 further comprising using acetone as the solvent.